CDM

Groundwater Monitoring Work Plan 2006

Boeing Realty Corporation
Former C-6 Facility
19503 South Normandie Avenue
Los Angeles, California

Boeing Realty Corporation

January 31, 2006

Prepared for:

Boeing Realty Corporation
4900 Conant Street
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Long Beach, CA 90846

Prepared by:

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Project No. 27355-47930. T7A.GW2006

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January 31, 2006

CDM Project File: 27355-47930, 5.2

Ms. Ana Townsend
California Regional Water Quality Control Board - Los Angeles Region
320 W. 4th Street, Suite 200
Los Angeles, California 90013

Subject: **Groundwater Monitoring Work Plan 2006**
Boeing Realty Corporation, Former C-6 Facility
19503 South Normandie Avenue
Los Angeles, California,

Dear Ms. Townsend:

On behalf of Boeing Realty Corporation (BRC), Camp Dresser & McKee Inc. (CDM) is submitting the above-referenced document for your review.

If you have any questions or concerns regarding this document, please call the undersigned at (949) 752-5452 or Joe Weidmann at (805) 563-8600.

Very truly yours,

Ravi Subramanian

Ravi Subramanian, P.E
Senior Project Manager

Enclosure

Cc: Brian Mossman, BRC
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Joe Weidmann, Haley & Aldrich

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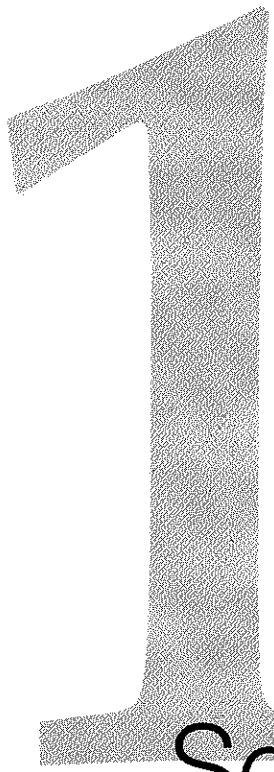
The information contained in the document titled "Groundwater Monitoring Work Plan 2006" for site "Former C-6 Facility, Los Angeles, California", dated January 31, 2006 has received appropriate technical review and approval. The conclusions and recommendations presented represent professional judgments and are based upon findings from the investigations and sampling identified in the report and the interpretation of such data based on our experience and background. This acknowledgement is made in lieu of all warranties, either expressed or implied. The activities outlined in this report were performed under the supervision of a California Registered Professional Engineer.

Prepared by:

Pearl Pereira
Staff Hydrogeologist

Reviewed and Approved by:

Ravi Subramanian, P.E.
Senior Project Manager



Section One

Section 1
Introduction

This work plan has been prepared for continuing groundwater monitoring at the Boeing Realty Corporation's (BRC) Former C-6 Facility (Site) in Los Angeles, California (Figure 1). A total of 47 groundwater monitoring events have been performed since 1987. Four monitoring events are planned for 2006, including:

- A site-wide annual event in March;
- A quarterly sampling event in June 2006 for some of the new groundwater monitoring wells installed in 2005 to complete the requirement of quarterly sampling for the first year;
- A plume boundary specific, semi-annual monitoring event in September; and

This work plan identifies the groundwater monitoring wells that will be sampled and chemicals that will be analyzed during each event. This sampling program is in addition to the groundwater monitoring program being performed under the general Waste Discharge Requirements Order No. R4-2002-0030: Series 007 for the Site groundwater bioremediation program. Results from the WDR monitoring program will be presented in separate reports . The following sections of this work plan present the Site background, the proposed groundwater monitoring program, and reporting.

1.1 Background

1.1.1 Site Geology

The Site is located on the Torrance Plain physiographic area of the West Coast Basin. Groundwater monitoring wells and soil borings drilled at the Site have encountered the Lakewood Formation, consisting of two major Hydrostratigraphic Units: the Bellflower Aquitard and the Gage Aquifer. Most of the groundwater monitoring wells at the Site have been installed within the Bellflower Aquitard, which extends to a depth of approximately 140 feet below ground surface (ft bgs). The top 20 to 50 feet of the Bellflower Aquitard below the Site consists of fine-grained soils (predominantly fine sands, silts, and clays) which thicken to the east. A sandy zone that dips downward to the east underlies the fine-grained soils. The sandy zone is generally 80 to 100 feet thick and contains discontinuous layers of fine-grained sediment that also dip downward to the east. The sandy unit is underlain by another fine-grained zone at depths of approximately 110 to 140 ft bgs.

1.1.2 Site Hydrogeology

Groundwater conditions at the Site have been characterized during previous investigations and groundwater monitoring events (Kennedy/Jenks Consultants, 2000a, England Geosystem/Haley and Aldrich, Inc., 2001b, and Haley and Aldrich

2002b). Groundwater at the Site is located in sediments of the Bellflower Aquitard, which has two sub-units, the Middle Bellflower Aquitard and the Lower Bellflower Aquitard. The uppermost groundwater appears to be under water table conditions, at depths of 60 to 70 feet bgs. Most of the Site groundwater monitoring wells are screened near the water table at depths ranging from 55 to 90 feet bgs. Two deeper wells, WCC-1D and WCC-3D, were screened in a deeper zone at approximately 115 to 140 feet bgs, and have since been abandoned.

The Site-specific water-bearing units of the Middle Bellflower Aquitard (MBA) and the Lower Aquitard (LBF) (Poland and others, 1959 and Department of Water Resources [DWR], 1961) are described below.

The Middle Bellflower Aquitard is a massive, light yellowish brown, fine to medium sand with local silt and clay zones. A fine-grained silt and clay layer, referred to as the Middle Bellflower mud (MBFM), locally interrupts this sand. Where divided, the top sand subunits are referred to as the B-Sand (MBFB); the bottom sand subunits as the C-Sand (MBFC).

The B-Sand is found at an approximate depth of 60 to 72 feet bgs at the Site, and is generally from 25 to 40 feet thick. The B-Sand predominantly consists of interbedded fine sands and silts. Groundwater flow within the B-Sand is predominantly to the south, with an approximate gradient of 0.001 ft/ft.

The uppermost groundwater at the Site occurs within the B-Sand at depths of 60 to 70 feet bgs. Most of the groundwater monitoring wells at the Site are completed within the B-Sand. Groundwater monitoring well completion information is summarized in Table 1.

The MBFM is discontinuous in the Site area, and comprised of laminated silts, laminated clays, and very fine sands. Thickness of the MBFM ranges from approximately 3 to 13 feet. The MBFM thins and appears to be absent in the northern portion of the Site.

The C-Sand is found at an approximate depth of 97 to 107 feet bgs at the Site, and extends to a depth of up to approximately 125 feet bgs. The C-Sand predominantly consists of interbedded medium-to-fine sands. Groundwater flow within the C-Sand is reported to be to the southeast (Kennedy Jenks Consultants, 2000b) and south with a gradient of 0.00095 ft/ft (Rubicon Engineering Corporation, 2005c).

The fine-grained Lower Bellflower Aquitard (LBF) occurs at an approximate depth of 114 to 150 feet bgs and ranges in thickness from 10 to 25 feet. The LBF separates the Bellflower sands from the underlying Gage Aquifer. The Gage Aquifer in the Site vicinity is predominantly sand and ranges in thickness from 40 to 78 feet thick. A total of four wells, which were installed in April and September 2005, are screened in the Gage Aquifer between depths of 155 and 195 feet bgs (Haley & Aldrich, 2005).

The Gage Aquifer is the Site vicinity is predominantly fine to medium sand with gravel and is reported to be approximately 40 to 50 feet thick in the Site vicinity (Haley & Aldrich, 2002b and Rubicon Engineering Corporation, 2005b). The groundwater occurs within the Gage Aquifer at depths of 66 to 68 feet bgs with the groundwater flow generally to the southeast with a gradient of 0.00025 ft/ft (Rubicon Engineering Corporation, 2005c).

1.2 Historical Groundwater Monitoring Events

Groundwater information at the Site is provided by four primary sources:

- Groundwater monitoring wells installed at the Site by BRC and its predecessors (prefixes include WCC, TMW, CMW, MWB, MWC, and MWG);
- Groundwater monitoring wells installed on the Site by International Light Metals (ILM) for investigations at ILM (prefixes DAC and BL);
- Groundwater monitoring wells installed on the Site by Montrose Chemical Corporation (Montrose) for investigations at Montrose (prefix XMW); and
- Bioremediation groundwater monitoring wells installed on the Site by BRC (prefixes IRZ).

Groundwater investigations began in early 1987 with the installation of groundwater monitoring wells. A total of 44 groundwater monitoring wells have since been installed at the Site. Twenty-four of these groundwater monitoring wells have been abandoned as a result of redevelopment activities. Three of these 24 wells (TMW-01, 02 and TMW-09) were abandoned during 2004 due to redevelopment activities.

The long-range groundwater monitoring needs for the Site were outlined in the Site-Wide Groundwater Monitoring Work Plan (Haley and Aldrich, 2003). This work plan proposed the installation of seven additional B-Sand and seven C-Sand monitoring wells as re-development access allowed. The Los Angeles Regional Water Quality Board (LARWQCB) approved this work plan on May 28, 2003. Eight of these groundwater monitoring wells (i.e., MWB012, MWB013, MWB014, MWB019, MWC015, MWC016, MWC017 and MWC021) were installed in the southern portion of the Site by the end of 2004 (Figure 2). Five of the six remaining proposed monitoring wells, consisting of three B-Sand (i.e., MWB007 [initially proposed as MW008], MWB009, and MWB020, and two C-Sand monitoring wells (i.e., MWC011, and MWC022) were installed in the northern portion of the Site. The remaining well (MWC009) was initially proposed on the northern portion but was actually installed south of Knox Street, due to Site redevelopment plans (Figure 3). One proposed well (MWB010) could not be installed because of the change in the redevelopment activities which would have resulted in the well being under the new building footprint. In addition to the groundwater monitoring wells proposed in the Site-wide Groundwater Monitoring Work Plan, two additional groundwater monitoring wells (i.e., MWB027 and MWB028) were installed in 2005 to replace monitoring wells

TMW-01 and -09, which were abandoned in 2004 due to the redevelopment of the Site (Figure 3). No well was installed to replace TMW-02 which was located within the new building footprint.

Four Gage Aquifer wells (MWG001 through MWG004) were also installed at the southern portion of the Site in 2005 as per the request by LARWQCB and U.S. Environmental Protection Agency (USEPA) (Haley and Aldrich, 2005). There are a total of 48 existing groundwater monitoring wells installed at the Site as of December 2005. Completion details for the 48 groundwater monitoring wells to be sampled in 2006 are included in Table 1.

In addition to the 48 existing groundwater monitoring wells at the Site, 13 IRZ bioremediation groundwater monitoring wells (8 B-Sand and 3 C-Sand wells) were installed in the southern portion of the Site in 2003 and 2004 to monitor the effectiveness of the IRZ bioremediation program (Figure 2). One B-Sand (i.e., MWB003) and four C-Sand (i.e., MWC004, MWC006, MWC007, and MWC023) bioremediation monitoring wells were also installed in the northern portion of the Site in 2005 to monitor the effectiveness of the previously bioremediation program as shown on Figure 3 (included in the total number of 48 wells).

Approximately 47 groundwater monitoring events have taken place at the Site since monitoring began in 1987. All of the groundwater monitoring wells were typically sampled during each groundwater monitoring event, performed quarterly until 1997. In 2000, the groundwater monitoring program was modified to two events per year, one full annual monitoring event, and one semi-annual source area monitoring event (Kennedy Jenks Consultants, 2000b).

The most recent annual groundwater monitoring data were collected in March 2005. The associated report (Rubicon Engineering Corporation, Inc., 2005a) describes a typical annual monitoring event for the Site:

- Twenty-six Site groundwater monitoring wells were gauged, and of which twenty-five were purged and sampled;
- Field parameters (pH, dissolved oxygen [DO], oxidation-reduction potential [ORP], electrical conductivity [EC], and temperature) were measured in 25 monitoring wells.
- Water samples were analyzed for Volatile Organic Compounds (VOCs) by EPA Method 8260B; and
- Quality Assurance/ Quality Control samples (duplicate samples, trip blanks, and equipment blanks [one per day except for duplicate samples which were collected at a frequency of 1 per 20 samples]) were collected and analyzed.

In addition, groundwater monitoring and sampling of 13 wells related to the bioremediation activities near the former Building 2 area were also included in this event.

Results of the 2005 annual groundwater monitoring are summarized in the Annual Groundwater Monitoring Report (Rubicon Engineering Corporation, 2005a). In general, groundwater conditions with respect to elevations, flow direction, and chemical concentrations are similar to previous years. An in-situ bioremediation system with 149 IRZ injection wells, 13 IRZ bioremediation monitoring wells were installed at the Site by the end of 2003 and in 2004. An expansion of the bioremediation system was installed in the northern portion of the Site in 2005. Significant redevelopment activities, consisting of construction of new buildings and paved areas, were also performed during 2005. Based on the current Site conditions, re-development plans, and proposed remediation activities, the following sections present the proposed 2006 groundwater monitoring program.

2 Section Two

Section 2
Proposed Groundwater Monitoring Program

The proposed 2006 groundwater monitoring program consists of three and potentially four sampling events:

- A site-wide annual event in March 2006, which will also include quarterly sampling of the 15 of the 17 wells installed in 2005.
- A quarterly sampling event in June 2006 for eight of the 17 new groundwater monitoring wells installed in 2005 to complete the requirement of quarterly sampling for the first year; and
- A plume boundary specific, semi-annual monitoring event in September 2006 which will also include quarterly sampling of six of the 17 wells installed in 2005.

The above events are described in Sections 2.1, 2.2, and 2.3. General monitoring considerations are described in Section 2.4. Details of the groundwater monitoring are described in Table 2, and Figures 2, 3, and 4. As stated previously, this monitoring is in addition to the WDR-specific groundwater monitoring being performed at the Site.

In addition to the above events, a quarterly event in December 2006 may be required for any new groundwater monitoring wells that are installed (based on future work plans) to complete the Site-Wide Workplan (Haley and Aldrich, 2003) requirements for initial sampling following well installation and sampling for three successive quarters thereafter.

As part of proposed remedial activities and in an effort to establish baseline levels, it is proposed to sample and analyze certain wells for additional compounds to provide baseline levels for future remediation verification; to assess the extent of biodegradation; evaluate the potential for monitored natural attenuation (MNA); and collect additional information for evaluating off-site impacts relative to the site. This additional sampling will also include the Gage Aquifer wells in order to provide a baseline to measure potential effects of remediation in the upper zones at the Site. The details of this additional sampling and analysis is provided in the appropriate sections.

2.1 Annual Groundwater Monitoring

The Site-wide annual monitoring event will be performed in March 2006. The routine groundwater monitoring program described in Section 2.4.2 will be performed at 48 groundwater monitoring wells, as indicated in Table 2. This task is expected to include:

- Measure static groundwater in 48 groundwater monitoring wells.

- Measure field parameters (from a calibrated probe placed in a flow through cell) such as pH, Dissolved oxygen (DO), oxidation-reduction potential (ORP), Electrical Conductivity (EC), temperature, and ferrous iron (Fe [II]).

- Groundwater samples will be collected from 48 monitoring wells and analyzed for VOCs by EPA Method 8260B.

- Groundwater samples from 22 select wells including three of the bioremediation monitoring wells (i.e., IRZB0095, IRZMW001B, and IRZCMW002) as shown on Table 2 will be also analyzed for the following dissolved gases and general minerals analysis.

  - Dissolved gases (carbon dioxide, nitrogen, ethane, ethane and methane) by RSK-175 and SM 4500-C (carbon dioxide) or equal;

  - Total organic carbon (TOC) by EPA Method 415.1 or equal;

  - Sulfate, nitrite, nitrate, ammonia nitrogen, orthophosphate, and chloride by EPA Method 300 Series or equal;

  - Manganese II (Mn II) by SM 3500-MND or equal or using a field test kit;

  - Total alkalinity by EPA Method 310 or equivalent or using a field test kit

  The selected wells include 13 B-Sand and nine C-Sand wells which cover the northern and southern portions of the site which had active biostimulation in the B-sand and C-Sand, upgradient/ crossgradient areas, site boundaries, and areas that did not receive biostimulation.

- Groundwater samples will also be collected from seven wells, including two of the bioremediation monitoring wells (i.e., IRZB0095 and IRZMW001B), as shown on Table 2 and analyzed for *Dehalococcoides* bacteria by Quantitative Polymerase Chain Reaction test (qPCR) to identify the amount of indigenous *Dehalococcoides* strains. The selected wells include four B-Sand and three C-Sand wells which cover the northern and southern portions of the site which had active biostimulation in the B-sand and C-Sand and areas that did not receive biostimulation.

- Collect quality control samples, including duplicates (1 per 20 wells = three), and equipment/rinseate blanks, field blanks, decontamination water, and trip blanks on each day of sampling (10 days = 40 total).

- Perform 3 levels of data validation (Tier 1, Tier 2, and Tier 3) on approximately 10 percent of the laboratory data as described in Section 2.4.4.

The monitoring methodology is presented in Section 2.4. If select wells cannot be accessed due to Site access issues, they will be scheduled for gauging and sampling

either during the semiannual event in September, or during the quarterly event in June. Groundwater monitoring wells installed on the Site by Montrose and ILM will be sampled through coordination with their respective environmental contractors.

2.2 Quarterly Groundwater Monitoring

Eight of the 17 groundwater monitoring wells (i.e., MWB003, MWB006, MWB027, MWB028, MWC006, MWC011, MWG003, and MWG004) installed at the Site in 2005 (Figure 3), will need to be sampled during this event to complete the requirement of quarterly sampling for the first year. Except for MWG003 and MWG004, the first sampling event for these wells were performed during the December 2005 quarterly sampling events. The second and third monitoring events for these six wells will be performed during the March 2006 annual and the June 2006 quarterly sampling events, respectively. The first and second sampling events for wells MWG003 and MWG004 were performed during the September 2005 semiannual and the December 2005 quarterly sampling events, respectively. The third and fourth (final) monitoring events for MWG003 and MWG004 will be performed during the March 2006 annual and the June 2006 quarterly sampling events, respectively. The routine monitoring program described in Section 2.4.2 will be performed on the eight new monitoring wells as indicated in Table 2 and shown on Figure 3. The monitoring methodology is presented in Section 2.4. This task is expected to include:

- Measure static groundwater in eight groundwater monitoring wells.
- Measure field parameters (from a calibrated probe placed in a flow through cell) such as pH, DO, ORP, EC, temperature, and ferrous iron.
- Groundwater samples will be collected from eight monitoring wells and analyzed for VOCs by EPA Method 8260B.
- Collect quality control samples, including duplicates (1 per 20 wells = one), and equipment/rinseate blanks, field blanks, decontamination water, and trip blanks on each day of sampling (two days = eight total).
- Perform 3 levels of data validation (Tier 1, Tier 2, and Tier 3) on approximately 10 percent of the laboratory data as described in Section 2.4.4.

2.3 Semiannual Groundwater Monitoring

The semiannual monitoring event will be performed in September 2006. The routine groundwater monitoring program, described in Section 2.4.2, will be performed at a reduced number (25) of groundwater monitoring wells and will focus on the boundaries of the groundwater plumes, as indicated in Table 2 and shown on Figure 4. This event will also include the fourth and final round of quarterly monitoring for six of the 17 groundwater monitoring wells (i.e., MWB003, MWB006, MWB027, MWB028, MWC006, and MWC011) installed at the Site in 2005. The routine monitoring program described in Section 2.4.2 will be performed on the 25

monitoring wells. The monitoring methodology is presented n Section 2.4. This task is expected to include:

- Measure static groundwater in48 groundwater monitoring wells.
- Measure field parameters (from a calibrated probe placed in a flow through cell) such as pH, DO, ORP, EC, temperature, and ferrous iron.
- Groundwater samples will be collected from 25 monitoring wells and analyzed for VOCs by EPA Method 8260B.
- Based on the results of the March 2006 sampling, a decision will be made to collect groundwater samples from the same wells as the March 2006 sampling event for dissolved gases and general minerals analysis and *Dehalococcoides* bacteria analysis by qPCR. The option of substituting the quantitative version with the qualitative version analysis will also be considered.
- Collect quality control samples, including duplicates (1 per 20 wells = two), and equipment/rinseate blanks, field blanks, decontamination water, and trip blanks on each day of sampling (five days = 20 total).
- Perform 3 levels of data validation (Tier 1, Tier 2, and Tier 3) on approximately 10 percent of the laboratory data as described in Section 2.4.4.

2.4 Groundwater Monitoring Methodology

2.4.1 Health and Safety

The work will be performed under a Site-specific Health and Safety Plan (HSP) which will be developed in accordance with the federal Occupational Safety and Health Act (OSHA) and Cal-OSHA regulations (Title 29 CFR, Section 1910.120 and 8 CCR 5192). CDM will prepare this HSP based on the existing HSP for groundwater monitoring at the BRC Former C-6 Facility prepared by Haley & Aldrich on June 8, 2001, and updated by addendum on October 30, 2002 and November 12, 2002 (Haley and Aldrich, Inc.,2001a, 2001b and 2002a). The HSP will be used by field staff while conducting field activities.

2.4.2 Fieldwork - Groundwater Monitoring and Sampling

BRC will notify the LARWQCB a minimum of one week prior to the start of groundwater monitoring events. The following activities will be performed:

2.4.2.1 Water Level Gauging

Prior to sampling each monitoring well, depth to groundwater will be measured in each well to the nearest one-hundredth of a foot using an electronic water level sounder. Data from the well gauging will be recorded in the Well Gauging Data Sheet (Appendix A), as well as the Boeing Data Management Plan (DMP) in an electronic form for upload to the project database (Boeing EDMS, 2002). Monitoring well vapor

concentrations will be measured with a photo-ionization detector (PID) following the removal of the well cap, and results will be recorded on the Well Gauging Data Sheet. During the one quarterly monitoring event in June 2006 only eight of the 17 new monitoring wells will be gauged. All of the existing Site monitoring wells will be gauged during the annual and semi-annual monitoring events in March and September 2006. If concurrent water level data from the IRZ bioremediation monitoring wells are available, these data will also be utilized. All of the groundwater monitoring wells will be gauged within a single 24-hour period with the same water sounding tape.

2.4.2.2 Well Purging and Sampling

Based on historical concentrations, groundwater monitoring wells will be sampled in order of increasing concentration. The results from the last annual monitoring event in March 2005, the semiannual event performed in September 2005, and the quarterly event performed in December 2005 were used to determine the sampling order for the March 2006 event (Table 2).The sampling order for the June 2006 quarterly event will be based on the results of the March 2006 annual event. The sampling order for the September 2006 semiannual sampling event will be based on the results of the June 2006 quarterly event and the March 2006 annual event.

Following well gauging, each well will be purged by extracting a minimum of three wetted well casing volumes of standing water with a pump. The depth to water, temperature, pH, and specific conductance will be measured and recorded periodically on a Groundwater Sampling Data Sheet (Appendix A) after each one-half wetted casing volume is purged from the well. Purging will be complete when a minimum of three wetted casing volumes have been removed and three consecutive measurements of specific conductance, pH, and temperature are within 10 percent of each other. If parameters do not stabilize after five casing volumes, purging will be complete. Dedicated tubing will be used for each well to minimize potential sampling equipment interference.

The intake of the submersible pump will be placed at a depth as close to the center of the screened interval as possible. The purge rate will not exceed 2 gallons per minute (gpm) for 4-inch diameter wells and 1 gpm for 2-inch diameter wells. The water level will be monitored during purging and the purge rate will be adjusted so that the draw-down in the well is minimized to prevent groundwater from cascading down the interior sidewalls of the well casing.

DO, ORP, and other field parameters will also be measured in the field as per Table 2. These parameters will be collected and recorded in accordance with the Standard Operating Procedures for Measuring Natural Attenuation Parameters (England Geosystem and Haley and Aldrich, 2001a).

After well purging parameters have stabilized, the pumping rate will be decreased to less than 0.1 gpm, and groundwater samples will be collected from the pump discharge in appropriate containers. Samples will be stored on ice in a cooler and

transported by courier to a California-certified analytical laboratory for analysis under proper chain-of-custody. Chain of custody forms will be maintained throughout sample collection and transport. An example of the chain of custody form is provided in Appendix A. The appropriate chain of custody information will also be electronically uploaded to the project database.

Equipment used for well purging and sampling will be cleaned prior to and between groundwater monitoring wells with an Alconox™ solution (or equivalent), then double-rinsed with tap water and deionized or distilled water to reduce the potential for cross-contamination. Well purge water and water used to decontaminate equipment will be stored in properly labeled, DOT-approved 55-gallon drums or other approved-containers and stored on-Site at a location selected by BRC. The drums will be properly manifested and disposed of by BRC following receipt of laboratory results.

Groundwater analytical results will be reported on RWQCB Laboratory Report Forms 10A/10B or their equivalent in units of milligrams per liter or micrograms per liter (mg/L) or micrograms per liter (μg/L). Field data will be collected and recorded on standard groundwater monitoring forms, in accordance with the Boeing Electronic DMP (Boeing EDMS, 2001).

The laboratory reports will be submitted electronically to CH2M Hill who will provide project data management.

2.4.3 Quality Assurance/Quality Control

2.4.3.1 Duplicate Samples

One duplicate groundwater sample will be collected for every 20 groundwater samples as a check for sample homogeneity and laboratory accuracy (three samples in March, one sample in June, and two in September). Duplicates will be collected, numbered, packaged, and sealed in the same as the other samples. Duplicates will be assigned separate sample numbers and submitted blind to the laboratory. Duplicate samples will be analyzed for VOCs by EPA Method 8260B.

2.4.3.2 Rinseate Blanks

One equipment rinseate blank sample will be collected prior to initiation of sampling activities as a check for cross-contamination during sample collection. Another sample will be collected each day throughout the duration of the sampling event when sampling equipment is cleaned and re-used in the field (an estimated 10 samples in March, two samples in June, and five samples in September). Deionized water will be used to fill or rinse the sampling equipment after the equipment has been cleaned, then collected in the sample containers. The equipment rinseate blanks will be analyzed for VOCs by EPA Method 8260B.

2.4.3.3 Field Blanks

One field blank will be collected each day with laboratory supplied water to check for contamination by sampling methodology (an estimated 10 samples in March, two samples in June, and five samples in September). The field blanks will be analyzed for VOCs by EPA Method 8260B.

2.4.3.4 Decontamination Water

One water sample will be collected each field day from the water used for decontamination of the sampling equipment (an estimated 10 samples in March, two samples in June, and five samples in September). The decontamination water sample will be analyzed for VOCs by EPA Method 8260B.

2.4.3.5 Travel Blanks

One travel blank will be prepared in the laboratory for each day that groundwater samples are collected and shipped to the laboratory (an estimated 10 samples in March, two samples in June, and five samples in September). The travel blanks will be prepared in a clean environment and kept in the cooler used to ship samples. The travel blank provides a check for contamination during transport, and will be analyzed for VOCs by EPA Method 8260B.

2.4.4 Data Validation

A subcontractor (Laboratory Data Consultants, Inc. [LDC] from Carlsbad, California) will perform three levels of data validation: Tier 1, Tier 2, and Tier 3 validation. The validation process will follow the U.S. Environmental Protection Agency (EPA) Contract Laboratory Program National Functional Guidelines for Organic Data Review (EPA, 1999 and 2002). Approximately 10 percent of the laboratory data will be reviewed during each monitoring event to ensure that the data are of sufficient quality (five samples from the March annual event, one sample from the June quarterly event, and three samples from the September semi-annual event). The data packages to be validated will be selected randomly. Approximately 55 percent of the data will be subjected to Tier 1 validation, 40 percent will be subjected to Tier 2 validation, and 5 percent will be subjected to Tier 3 validation.

3 Section Three

Section 3
Groundwater Monitoring Report

The report for the annual groundwater monitoring event will contain the following:

- Groundwater elevation contour maps for the B-Sand, the C-Sand, and the Gage Aquifer water bearing units;
- Tables and figures that depict groundwater analytical results;
- Groundwater sampling forms and field notes documenting field activities;
- Laboratory reports and chain of custody documentation;
- Appropriate descriptions of the sampling event, test results, and discussion and conclusions regarding water quality and hydrogeologic changes at the Site;
- Discussion of changes in conditions that might affect future sampling events; and
- Recommendations for modifications to the sampling program, if necessary.

The report for the semiannual groundwater monitoring event will contain the following:

- Groundwater elevation contour maps for the B-Sand, the C-Sand, and the Gage Aquifer water bearing units;
- Tables presenting the groundwater analytical results;
- Groundwater sampling forms and field notes documenting field activities; and
- Laboratory reports and chain of custody documentation;

Reports will be submitted to the LARWQCB approximately 60 days after the receipt of laboratory results from each sampling event. With the annual and semiannual monitoring events occurring in March and September 2006, reports for these events will be provided to the LARWQCB by May 31 and November 30, 2006. The results from the June 2006 quarterly sampling will be included in the report for the September 2006 semiannual sampling event. The reports will consist of a hard copy of text, tables, figures, and analytical data. An electronic version of the report on compact disc will also be provided with the hard copy document.

4 Section Four

Section 4
References

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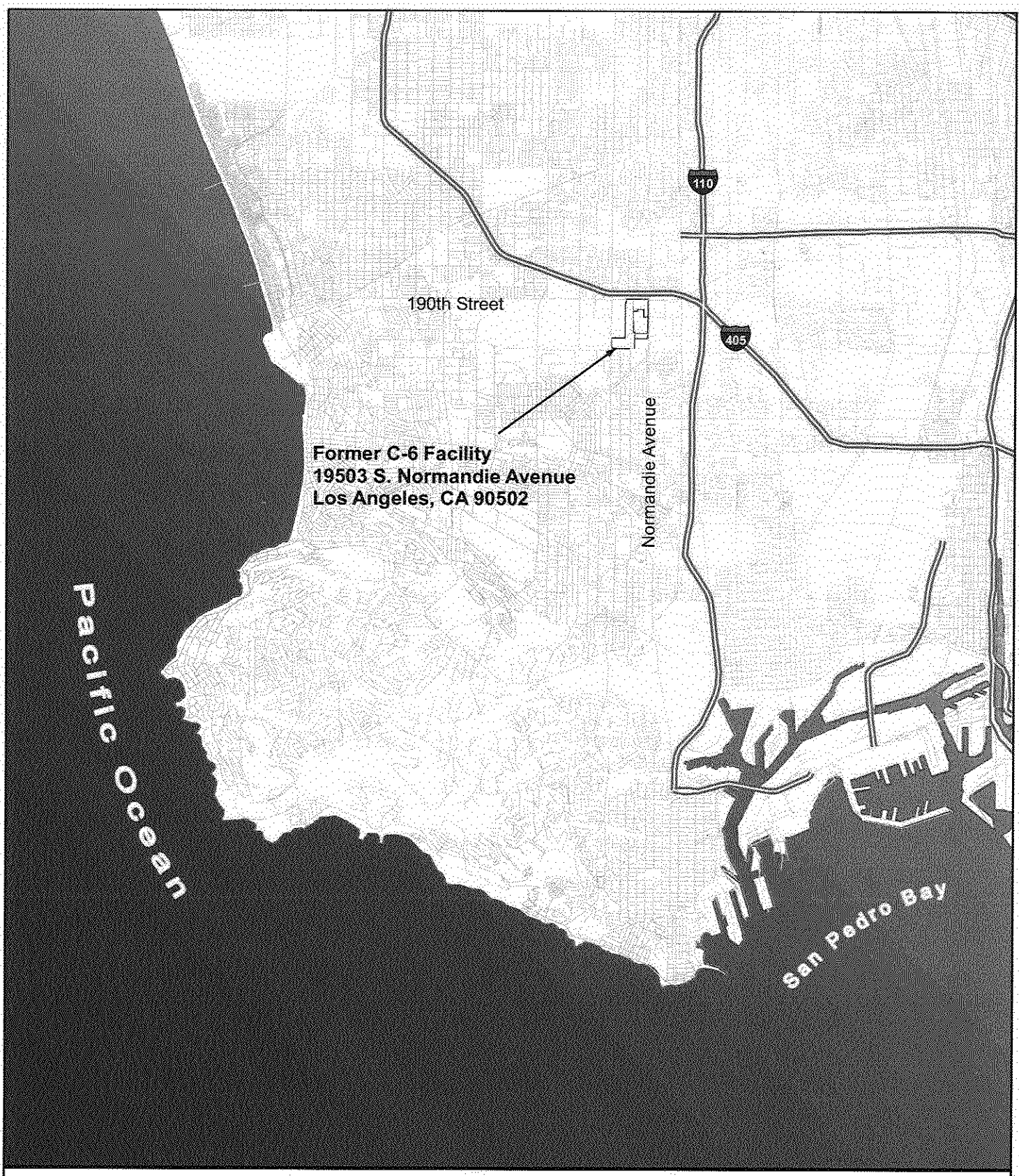
5 Section Five

Section 5
Figures



2 0 2
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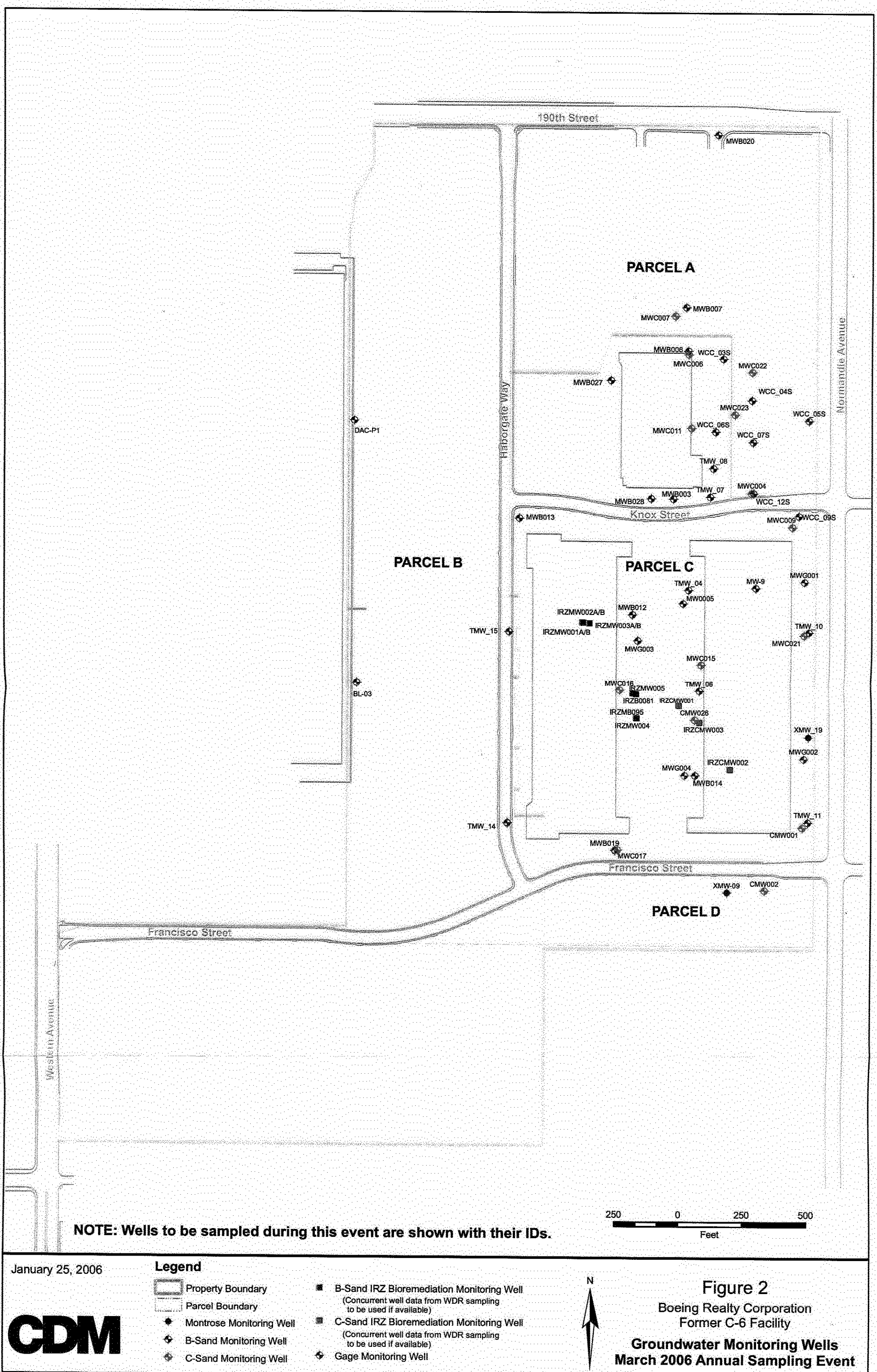
Figure 1

Boeing Realty Corporation
Former C-6 Facility

Site Vicinity Map

CDM



NOTE: Wells to be sampled during this event are shown with their IDs.

January 25, 2006

CDM

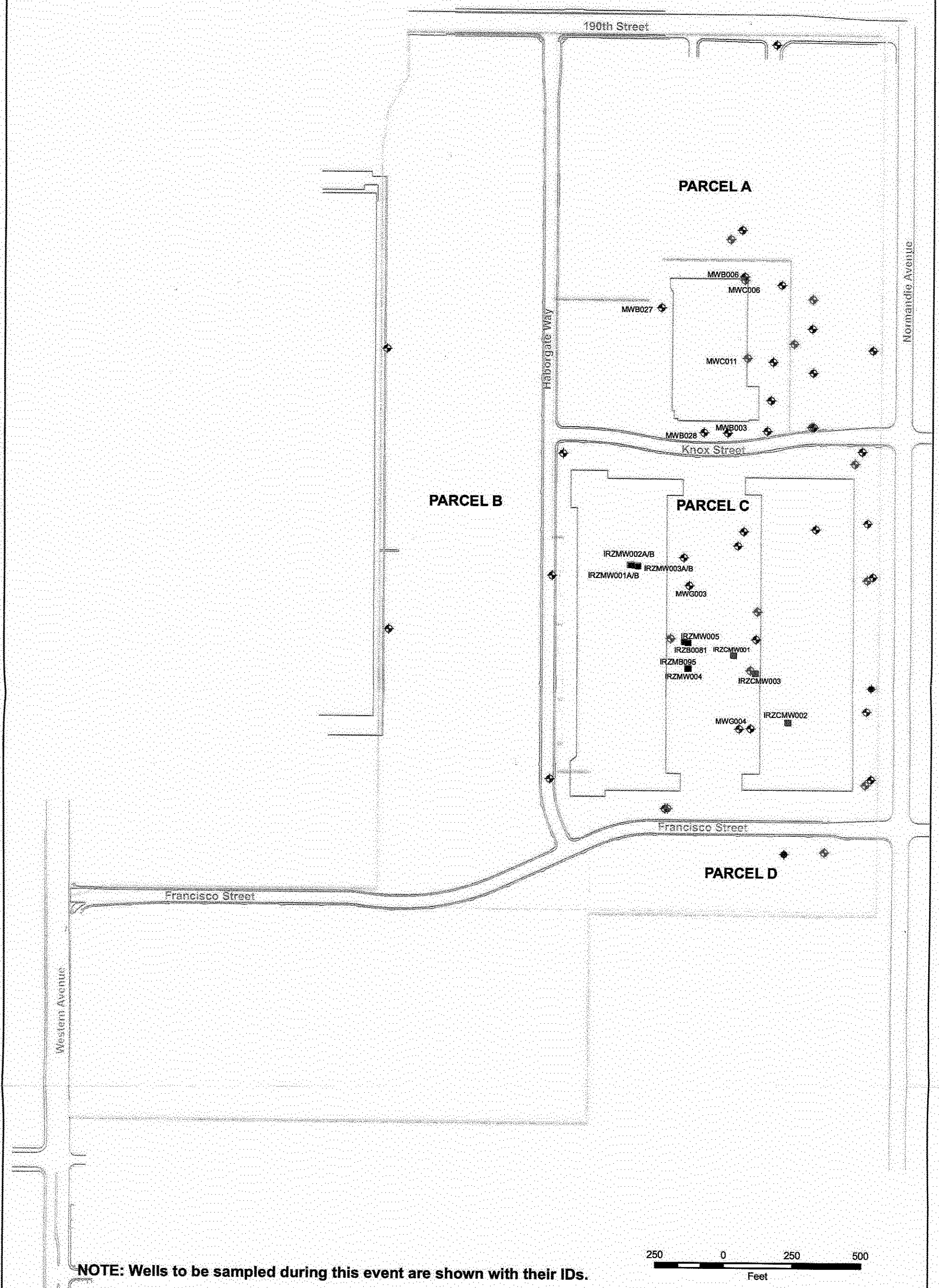
Legend

- Property Boundary
- Parcel Boundary
- Montrose Monitoring Well
- B-Sand Monitoring Well
- C-Sand Monitoring Well
- B-Sand IRZ Bioremediation Monitoring Well (Concurrent well data from WDR sampling to be used if available)
- C-Sand IRZ Bioremediation Monitoring Well (Concurrent well data from WDR sampling to be used if available)
- Gage Monitoring Well

Figure 2

Boeing Realty Corporation
Former C-6 Facility

Groundwater Monitoring Wells
March 2006 Annual Sampling Event



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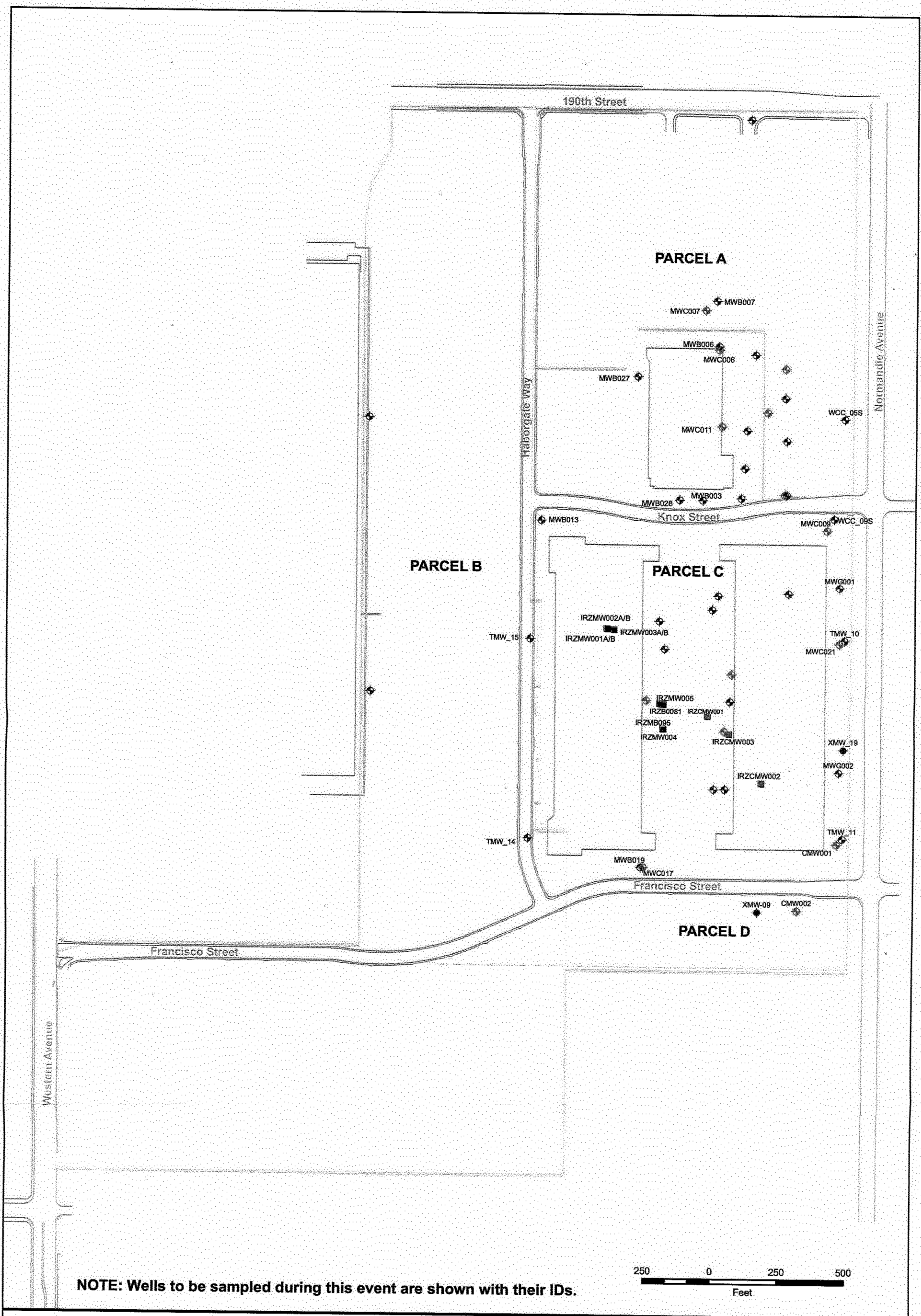

190th Street
PARCEL A
MWB007
MWC007
MWB006
MWC006
MWB027
WCC_05S
MWC011
Normandie Avenue
Haborgate Way
MWB028
MWB003
Knox Street
MWB013
MWC009
WCC_09S
PARCEL B
PARCEL C
MWG001
IRZMW002A/B
IRZMW003A/B
IRZMW001A/B
TMW_15
TMW_10
MWC021
IRZMW005
IRZB0081
IRZCMW001
IRZMB09S
IRZMW004
IRZCMW003
XMW_19
MWG002
IRZCMW002
TMW_11
TMW_14
CMW001
MWB019
MWC017
Francisco Street
XMW-09
CMW002
PARCEL D
Francisco Street
Weston Avenue
NOTE: Wells to be sampled during this event are shown with their IDs.
250 0 250 500
Feet
January 25, 2006
Legend
Property Boundary
Parcel Boundary
Montrose Monitoring Well
B-Sand Monitoring Well
C-Sand Monitoring Well
B-Sand IRZ Bioremediation Monitoring Well
(Concurrent well data from WDR sampling to be used if available)
C-Sand IRZ Bioremediation Monitoring Well
(Concurrent well data from WDR sampling to be used if available)
Gage Monitoring Well
N
CDM
Figure 4
Boeing Realty Corporation
Former C-6 Facility
Groundwater Monitoring Wells
September 2006 Semi-Annual Sampling Event

6 Section Six

Section 6
Tables

Table 1

Groundwater Monitoring Well Details
Former C-6 Facility
Los Angeles, California

Well I.D.	Water Bearing Unit	Easting[1]	Northing[1]	Reference Elevation (AMSL)[2]	Boring Total Depth (feet)	Screen Depth Interval (feet)	Depth to Top of Filter Pack (feet)	Casing Diameter (inches)	Casing Type	Slot Size (inches)	Drilled Date
WCC_3S	B-Sand	6,470,384	1,770,027	51.12	92	69-89	64	4	Sch 40 PVC	0.01	10/26/1987
WCC_4S	B-Sand	6,470,496	1,769,864	52.23	92	70.5-90.5	65	4	Sch 40 PVC	0.01	10/27/1987
WCC_5S	B-Sand	6,470,718	1,769,786	52.82	91	61-91	64	4	Sch 40 PVC	0.01	11/24/1987
WCC_6S	B-Sand	6,470,354	1,769,741	51.3	91	60-90	54	4	Sch 40 PVC	0.01	9/22/1989
WCC_7S	B-Sand	6,470,501	1,769,702	52.21	91	60-90	54	4	Sch 40 PVC	0.01	6/8/1989
WCC_9S	B-Sand	6,470,680	1,769,416	57.39	92	60-90	55	4	Sch 40 PVC	0.01	9/21/1989
WCC_12S	B-Sand	6,470,503	1,769,503	51.32	92	60-90	55	4	Sch 40 PVC	0.01	9/17/1990
DAC-P1	B-Sand	6,468,949	1,769,781	55.13	90	60-90	55	4	Sch 40 PVC	0.01	9/25/1989
TMW_4	B-Sand	6,470,250	1,769,123	51.39	84	58-78	56	2	Sch 40 PVC	0.01	6/30/1998
TMW_6	B-Sand	6,470,295	1,768,725	51.72	93	67-87	66	2	Sch 40 PVC	0.01	7/1/1998
TMW_7	B-Sand	6,470,334	1,769,489	52.52	91	65-85	63	2	Sch 40 PVC	0.01	6/29/1998
TMW_8	B-Sand	6,470,346	1,769,600	53.99	90	61-81	59	2	Sch 40 PVC	0.01	6/29/1998
TMW_10	B-Sand	6,470,720	1,768,958	49.92	85	60.5-80.5	58	2	Sch 40 PVC	0.01	1/28/1999
TMW_11	B-Sand	6,470,717	1,768,211	49.85	83	58-78	55	2	Sch 40 PVC	0.01	2/1/1999
TMW_14	B-Sand	6,469,546	1,768,206	58.91	90	65-85	63	2	Sch 40 PVC	0.01	2/3/1999
TMW_15	B-Sand	6,469,551	1,768,957	57.65	92	62-87	60	2	Sch 40 PVC	0.01	2/4/1999
BL-03	B-Sand	6,468,959	1,768,754	58.66	79	59-79	56	2	Sch 40 PVC	0.01	2/8/1999
MW0005	B-Sand	6,470,228	1,769,070	52.1	87	65-85	63	4	Sch 40 PVC	0.01	8/8/2003
MWB012	B-Sand	6,470,031	1,769,026	52.43	90.5	64.5-84.5	62	4	Sch 40 PVC	0.01	5/17/2004
MWB013	B-Sand	6,469,589	1,769,403	55.33	86.5	65-85	62	4	Sch 40 PVC	0.01	5/17/2004
MWB014	B-Sand	6,470,277	1,768,394	51.69	86.5	65-85	62	4	Sch 40 PVC	0.01	5/17/2004
MWB019	B-Sand	6,469,966	1,768,100	55.18	90.5	65-85	62	4	Sch 40 PVC	0.01	5/17/2004
XMW-09	B-Sand	6,470,403	1,767,937	53.16	-	66-81	-	4	-	-	5/9/1989
XMW-19	B-Sand	6,470,718	1,768,545	49.38	-	63-79	-	4	-	-	3/30/1990
CMW0001	C-Sand	6,470,696	1,768,190	54.37	124	99-124	97	4	Sch 40 PVC	0.01	8/15/2003
CMW0002	C-Sand	6,470,550	1,767,943	52.81	124	99-124	97	4	Sch 40 PVC	0.01	9/5/2003
CMW026	C-Sand	6,470,275	1,768,610	51.36	117	92-117	90	4	Sch 40 PVC	0.01	8/6/2003
MWC015	C-Sand	6,470,300	1,768,828	51.51	128	100-125	126.5	4	Sch 40 PVC	0.01	5/17/2004
MWC016	C-Sand	6,469,983	1,768,727	52.61	131	102.5-127.5	101	4	Sch 40 PVC	0.01	5/17/2004
MWC017	C-Sand	6,469,975	1,768,100	55.16	128	100-125	99	4	Sch 40 PVC	0.01	5/17/2004
MWC021	C-Sand	6,470,701	1,768,946	54.53	126	97-122	95	4	Sch 40 PVC	0.01	5/17/2004

Table 1

Groundwater Monitoring Well Details
Former C-6 Facility
Los Angeles, California

Well I.D.	Water Bearing Unit	Easting[1]	Northing[1]	Reference Elevation (AMSL)[2]	Boring Total Depth (feet)	Screen Depth Interval (feet)	Depth to Top of Filter Pack (feet)	Casing Diameter (inches)	Casing Type	Slot Size (inches)	Drilled Date
Bioremediation Monitoring Wells											
IRZB0081	B-Sand	6,470,048	1,768,711	50.28	-	64.5-89.5	63	0.75	PVC	0.01	9/4/2003
IRZB0095	B-Sand	6,470,049	1,768,616	50.08	-	65-90	63.2	0.75	PVC	0.01	9/5/2003
IRZMW001A	B-Sand	6,469,840	1,768,995	56.77	-	65-75	63	1.5	PVC	0.01	6/26/2002
IRZMW001B	B-Sand	6,469,840	1,768,995	56.7	-	80-90	79	1.5	PVC	0.01	6/26/2002
IRZMW002A	B-Sand	6,469,836	1,768,996	56.66	-	68-78	66	1.5	PVC	0.01	6/3/2003
IRZMW002B	B-Sand	6,469,836	1,768,996	56.76	-	83-93	82	1.5	PVC	0.01	6/3/2003
IRZMW003A	B-Sand	6,469,864	1,768,992	56.73	-	61-71	60	1.5	PVC	0.01	6/2/2003
IRZMW003B	B-Sand	6,469,864	1,768,992	56.78	-	80-90	79	1.5	PVC	0.01	6/2/2003
IRZMW004	B-Sand	6,470,047	1,768,617	53.06	-	65-90	63	4	PVC	0.01	9/4/2003
IRZMW005	B-Sand	6,470,034	1,768,715	52.77	-	65-90	63	4	PVC	0.01	9/5/2003
IRZCMW001	C-Sand	6,470,214	1,768,667	51.74	-	92-117	90	4	PVC	0.01	8/6/2003
IRZCMW002	C-Sand	6,470,414	1,768,417	55.6	-	96-121	94	4	PVC	0.01	5/17/2004
IRZCMW003	C-Sand	6,470,294	1,768,600	51.69	-	92-117	90	4	PVC	0.01	5/17/2004
Groundwater Monitoring Wells installed in 2005											
MWB007	B-Sand	6,470,207	1,770,220	51.39	92	60-90	57	4	Sch 40 PVC	0.02	6/6/2005
MWB020	B-Sand	6,470,392	1,770,870	51.07	120.5	59.5-89.5	56	4	Sch 40 PVC	0.02	6/6/2005
MWC004	C-Sand	6,470,483	1,769,498	51.86	118	96-116	93	4	Sch 40 PVC	0.02	6/7/2005
MWC007	C-Sand	6,470,168	1,770,179	51.57	119	97-117	93.5	4	Sch 40 PVC	0.02	6/3/2005
MWC009	C-Sand	6,470,654	1,769,372	53.99	125	101-121	97.5	4	Sch 40 PVC	0.02	4/28/2005
MWC022	C-Sand	6,470,450	1,769,993	51.6	120	97-117	93.5	4	Sch 40 PVC	0.02	6/7/2005
MWC023	C-Sand	6,470,424	1,769,809	51.43	120	97-117	94	4	Sch 40 PVC	0.02	6/7/2005
MWG001	Gage Aquifer	6,470,702	1,769,156	54.13	190	156-186	152	2	Sch 40 PVC	0.02	4/22/2005
MWG002	Gage Aquifer	6,470,701	1,768,459	54.78	195	162-192	158	2	Sch 40 PVC	0.02	4/28/2005
MWG003	Gage Aquifer	6,470,052	1,768,923	53.079	185	154.5-184.5	150	2	Sch 40 PVC	0.02	9/12/2005
MWG004	Gage Aquifer	6,470,227	1,768,396	52.049	186	155-185	150	2	Sch 40 PVC	0.02	9/12/2005
MWB003	B-Sand	6,470,189	1,769,482	56.95	92	65-90	63	2	PVC	0.02	11/30/2005
MWB006	B-Sand	6,470,248	1,770,058	53.9	92	65-90	63	2	PVC	0.02	12/1/2005
MWB027	B-Sand	6,469,945	1,769,941	57.14	90	67.5-87.5	65	2	PVC	0.02	11/30/2005
MWB028	B-Sand	6,470,103	1,769,482	56.84	92	65-90	63	2	PVC	0.02	12/1/2005
MWC006	C-Sand	6,470,248	1,770,044	54.03	117.5	95-115	93	2	PVC	0.02	11/29/2005
MWC011	C-Sand	6,470,259	1,769,756	54.03	117	94-114	92	2	PVC	0.02	11/29/2005

[1] California State Plane NAD 83, Zone 5, Feet

[2] AMSL = Above Mean Sea Level - All wells installed prior to 2005 were surveyed by Tait & Associates on May 19, 2005 with the exception of wells WCC-3S, WCC-6S, TMW-07, TMW-08, IRZB0081 and IRZB0095.

Table 2

2006 Groundwater Monitoring Program
Former C-6 Facility
Los Angeles, California

Well ID	Water Bearing Unit	Annual Event Analytical Program March 2006					Quarterly Event (for wells installed in 2005) June 2006				Semiannual Event Analytical Program September 2006				
		Sampling Order (March 2006)[1]	Water Level Gauging	VOCs (8260B)	Field Parameters	Dissolved Gases and Minerals[4]	qPCR	Sampling Order (June 2006)[2]	Water Level Gauging	VOCs (8260B)	Field Parameters	Sampling Order (September 2006)[3]	Water Level Gauging	VOCs (8260B)	Field Parameters	Dissolved Gases and Minerals[4, 5]	qPCR[5]
WCC_3S	B-Sand	38	x	x	x								x				
WCC_4S	B-Sand	37	x	x	x	x							x				
WCC_5S	B-Sand	1	x	x	x								x	x	x		
WCC_6S	B-Sand	40	x	x	x	x	x						x				
WCC_7S	B-Sand	24	x	x	x								x				
WCC_9S	B-Sand	16	x	x	x								x	x	x		
WCC_12S	B-Sand	23	x	x	x								x				
DAC-P1	B-Sand	51	x	x	x								x				
TMW_04	B-Sand	43	x	x	x								x				
TMW_06	B-Sand	27	x	x	x								x				
TMW_07	B-Sand	44	x	x	x	x							x				
TMW_08	B-Sand	45	x	x	x								x				
TMW_10	B-Sand	6	x	x	x	x							x	x	x		
TMW_11	B-Sand	4	x	x	x								x	x	x		
TMW_14	B-Sand	7	x	x	x								x	x	x		
TMW_15	B-Sand	11	x	x	x	x							x	x	x		
BL-03	B-Sand	35	x	x	x								x				
MW0005	B-Sand	47	x	x	x	x							x				
MWB012	B-Sand	33	x	x	x								x				
MWB013	B-Sand	5	x	x	x	x							x	x	x		
MWB014	B-Sand	29	x	x	x	x							x				
MWB019	B-Sand	21	x	x	x	x	x						x	x	x		
XMW-09	B-Sand	14	x	x	x								x	x	x		
XMW-19	B-Sand	2	x	x	x								x	x	x		
CMW001	C-Sand	28	x	x	x								x	x	x		
CMW002	C-Sand	36	x	x	x	x	x						x	x	x		
CMW026	C-Sand	30	x	x	x	x	x						x				
MWC015	C-Sand	42	x	x	x								x				
MWC016	C-Sand	41	x	x	x	x							x				
MWC017	C-Sand	25	x	x	x	x							x	x	x		
MWC021	C-Sand	10	x	x	x	x							x	x	x		
Bioremediation Monitoring Wells																	
IRZB0081	B-Sand																
IRZB0095	B-Sand	31				x	x										
IRZMW001A	B-Sand																
IRZMW001B	B-Sand	39				x	x										
IRZMW002A	B-Sand																
IRZMW002B	B-Sand																
IRZMW003A	B-Sand																
IRZMW003B	B-Sand																
IRZMW004	B-Sand																
IRZMW005	B-Sand																
IRZCMW001	C-Sand																
IRZCMW002	C-Sand	50				x											
IRZCMW003	C-Sand																

Table 2

2006 Groundwater Monitoring Program
Former C-6 Facility
Los Angeles, California

Well ID	Water Bearing Unit	Sampling Order (March 2006)[1]	Annual Event Analytical Program March 2006					Sampling Order (June 2006)[2]	Quarterly Event (for wells installed in 2005) June 2006			Sampling Order (September 2006)[3]	Semiannual Event Analytical Program September 2006				
			Water Level Gauging	VOCs (8260B)	Field Parameters	Dissolved Gases and Minerals[4]	qPCR		Water Level Gauging	VOCs (8260B)	Field Parameters		Water Level Gauging	VOCs (8260B)	Field Parameters	Dissolved Gases and Minerals[4, 5]	qPCR[5]
Groundwater Monitoring Wells installed in 2005[6]																	
MWB007	B-Sand	46	x	x	x								x	x	x		
MWB020	B-Sand	13	x	x	x	x							x				
MWC004	C-Sand	22	x	x	x	x							x				
MWC007	C-Sand	3	x	x	x	x							x	x	x		
MWC009	C-Sand	26	x	x	x								x	x	x		
MWC022	C-Sand	17	x	x	x								x				
MWC023	C-Sand	34	x	x	x								x				
MWG001	Gage	8	x	x	x								x	x	x		
MWG002	Gage	19	x	x	x								x	x	x		
MWG003	Gage	15	x	x	x				x	x	x		x				
MWG004	Gage	9	x	x	x				x	x	x		x				
MWB003	B-Sand	49	x	x	x				x	x	x		x	x	x		
MWB006	B-Sand	48	x	x	x	x			x	x	x		x	x	x		
MWB027	B-Sand	32	x	x	x				x	x	x		x	x	x		
MWB028	B-Sand	20	x	x	x				x	x	x		x	x	x		
MWC006	C-Sand	12	x	x	x				x	x	x		x	x	x		
MWC011	C-Sand	18	x	x	x	x	x		x	x	x		x	x	x		
Quality Control Samples																	
Duplicates (1 per 20 wells)				x (est. 3)						x (est. 1)				x (est. 2)			
Rinsate Blanks (1 per day)				x (est. 10)						x (est. 2)				x (est. 5)			
Field Blanks (1 per day)				x (est. 10)						x (est. 2)				x (est. 5)			
Decon Water (1 per day)				x (est. 10)						x (est. 2)				x (est. 5)			
Trip Blanks (1 per day)				x (est. 10)						x (est. 2)				x (est. 5)			

Notes:

est. = Quality control sample number estimated based on estimated number of sampling days.

VOCs = Volatile organic compounds by EPA Method 8260B

Field Parameters = pH, Dissolved oxygen (DO), oxidation-reduction potential (ORP) parameters, Electrical Conductivity (EC), temperature, and ferrous iron

qPCR =Quantitative Polymerase Chain Reaction test for Dehalococcoides bacteria

[1] Sampling order for March 2006 will be based on the results of the March 2005 annual, September 2005 semiannual, December 2005 quarterly events

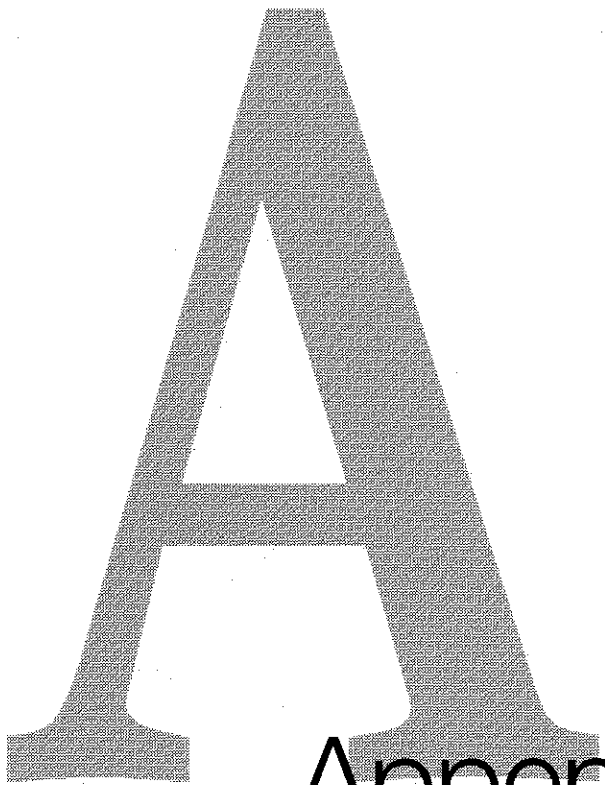
[2] Sampling order for June 2006 quarterly event will be based on the results of the March 2006 annual event

[3] Sampling order for September 2006 will be based on the results of the March 2006 annual and June 2006 quarterly events

[4] See Section 2.1 for Dissolved Gases and General Minerals

[5] The necessity for doing dissolved gases, general minerals, and qPCR analysis will be determined based on the results of the March 2006 event

[6] Groundwater monitoring wells installed in 2005 will be sampled quarterly for four quarters starting September 2005.



Appendix A

Appendix A
Field Forms

Well Gauging Data Sheet

Site Name: BRC, Former C-6 Facility
Project:

Well ID	Date	Time	Diameter (inches)	PID (ppm)	Measurement Point (mp)	Well Installation/Boring Depth (ft-bmp)	Screened Interval (feet)	Depth to Water (ft-bmp)	Depth to LNAPL (ft-bmp)	LNAPL Thickness (ft)	Total Depth (ft-bmp)	Personnel	Comments

Notes:

ft-bmp = Feet Below Measurement Point

Serial Number

SEVERN TRENT STL

STL Los Angeles

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

STL Los Angeles
1721 South Grand Avenue
Santa Ana, CA 92705
Email: www.stl-inc.com
Phone: (714) 258-8610
Fax: (714) 258-0921

Alternate Laboratory Name/Location:
Phone:
Fax:

PROJECT REFERENCE	PROJECT NO.	PROJECT LOCATION (STATE)
STL (LAB) PROJECT MANAGER	P.O. NUMBER	CONTRACT NO.
CLIENT (SITE) PM	CLIENT PHONE	CLIENT FAX
CLIENT NAME	CLIENT EMAIL	
CLIENT ADDRESS		
COMPANY CONTRACTING THIS WORK (if applicable):		

PAGE ____ OF ____

STANDARD REPORT DELIVERY ○
DATE DUE_____
EXPEDITED REPORT DELIVERY (SURCHARGE) ○
DATE DUE_____
NUMBER OF COOLERS SUBMITTED PER SHIPMENT:

SAMPLE DATE	SAMPLE TIME	SAMPLE IDENTIFICATION	MATRIX TYPE: COMPOSITE (C) OR GRAB (G) INDICATE	AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID (OIL, SOLVENT...)	REQUIRED ANALYSES: NUMBER OF CONTAINERS SUBMITTED	PRESERVATIVE	REMARKS
				G						

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
EMPTY CONTAINERS								
RECEIVED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
EMPTY CONTAINERS								

LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT YES ○ NO ○	CUSTODY SEAL NO.	STL LOG NO.	LABORATORY REMARKS:

BOE-C6-0105704

FCU036:12.20.00:2

STL Los Angeles File Copy

Groundwater Sampling Data Sheet

Page __ of __

Project Name:	**Date:**
Project No.: EM	**Prepared By:**
Well Identification:	**Weather:**
Measurement Point Description:	**Pump Intake:** **Screen:**

A	B	E	C							
Depth to LNAPL (ft-bmp)	**Depth to Static Water Level (ft-bmp)**	**Well Total Depth (ft-bmp)**	**Water Column Height (ft)** *(A – B = C)*	**LNAPL Thickness (ft-bmp)**	**One (1) Casing Volume (gallons)** *(C XD=E)*	**Three (3) Casing Volumes (gallons)** *(E x 3)*	**½ Casing Volume** *(E /2)*	**Above Screen Volume** *(Top screen – DTW)x D*	**Screen Volume** *(Screen length x D)*	**½ screen Volume**
---				---						

D	**Gallons/Foot**				**Field Equipment:** Solinst, Horiba
Well Diameter (in)	0.75	2	4	6	**Purge Method:**
Gallons per foot of casing	0.02	0.16	0.65	1.47	**Well Condition:**

Time	Casing/ Screen	Volume Purged (gallons)	Flow Rate (gpm)	Water Level (ft-bmp)	Ph	Temperature (°C)	Turbidity (NTU)	Conductivity ( )	Dissolved Oxygen (mg/L)	ORP (mV)	Observations

Purge Start Time	Purge End Time	Average Flow (gpm)	Total Gallons Purged	Total Casing Volumes Purged	80% Recovery Water Level Depth *B - (C x .80)*	Water Level at Sampling Time (ft-bmp)	Sample Collection Time	Sample Identification

Notes: **Dup.**

Drum No. :

ft-bmp = feet below measuring point

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